# Precision Airdrop Infantry Resupply

## Key Emerging Technology Area for Objective Force Sustainment

Smart Airdrop from High Altitude and when required, significantly offset from the Drop Zone

- Pinpoint, Just-in-Time Airdrop
- Eliminate Aircraft Vulnerability
- Eliminate Drop Zone Detectability

**Edward Doucette**
**Director, Airdrop/Aerial Delivery Directorate**
**U.S. Army Natick Soldier Center**

# What Is Precision Airdrop?

- Family of Parachutes and Control Systems (based on weight)
- Common Navigation System

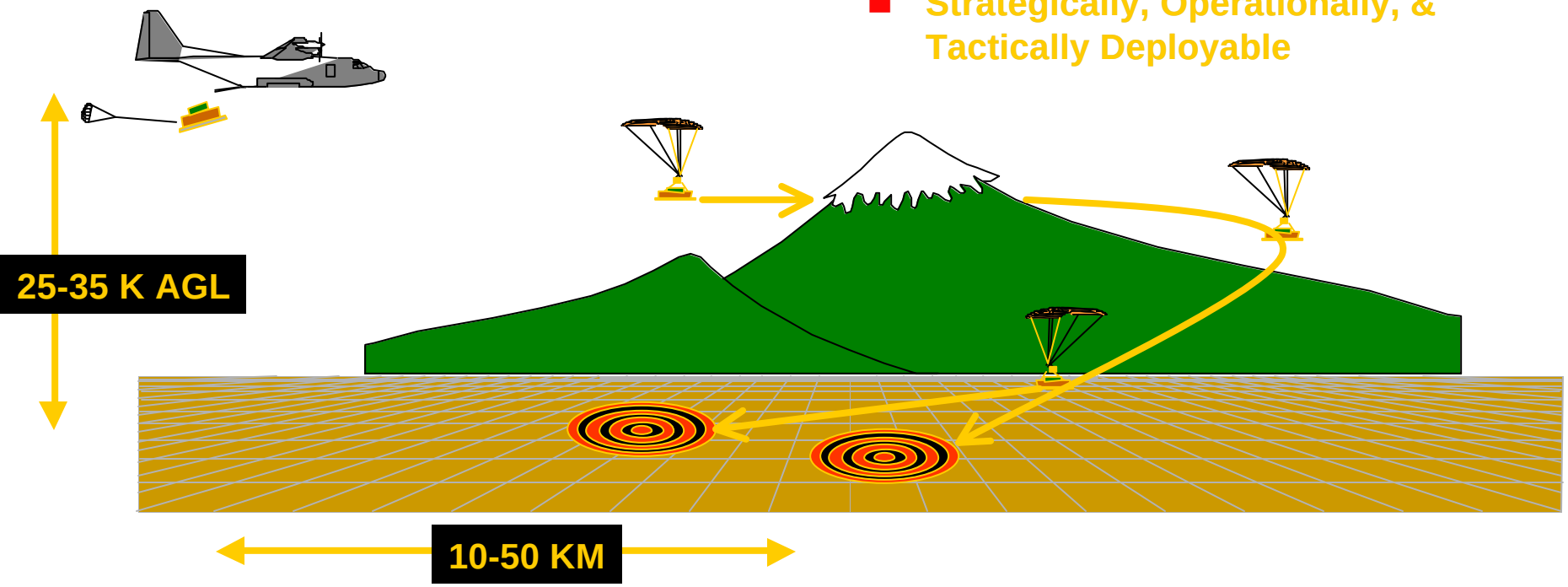
**RIGGED LOAD**

- Standard Bundle
- Standard Pallet
- New technology?

# Benefits of Precision Airdrop

- ***Increased USAF Survivability***
- **High Altitude Deployment 25-35 K FT**
- **Offset/Standoff 15-50 KM**
- **Autonomous Operation**
- **Compensates for CARP Errors**

- ***Rapid Resupply Over Strategic Distances***
- **Increased Accuracy (25-100 M CEP)**
- **Multiple Loads/Multiple Destinations**
- **Major Sustainment Enabler and Footprint Reducer**
- **Strategically, Operationally, & Tactically Deployable**



# Future Precision Aerial Resupply Family of Systems

- Precision Gliding Airdrop
- High Altitude, Precision Container Delivery Airdrop
- Powered, Extended Offset Precision

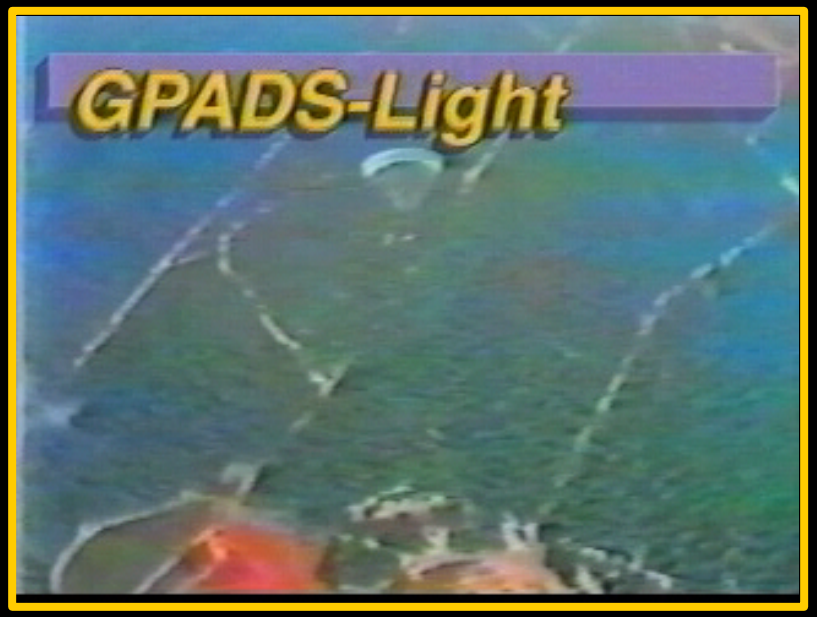
**Objective Force Aerial Resupply**

**Autonomous, Remote Delivery of Sensors, Munitions & Equipment to Multiple Drop Sites**

# Powered Parafoil Resupply

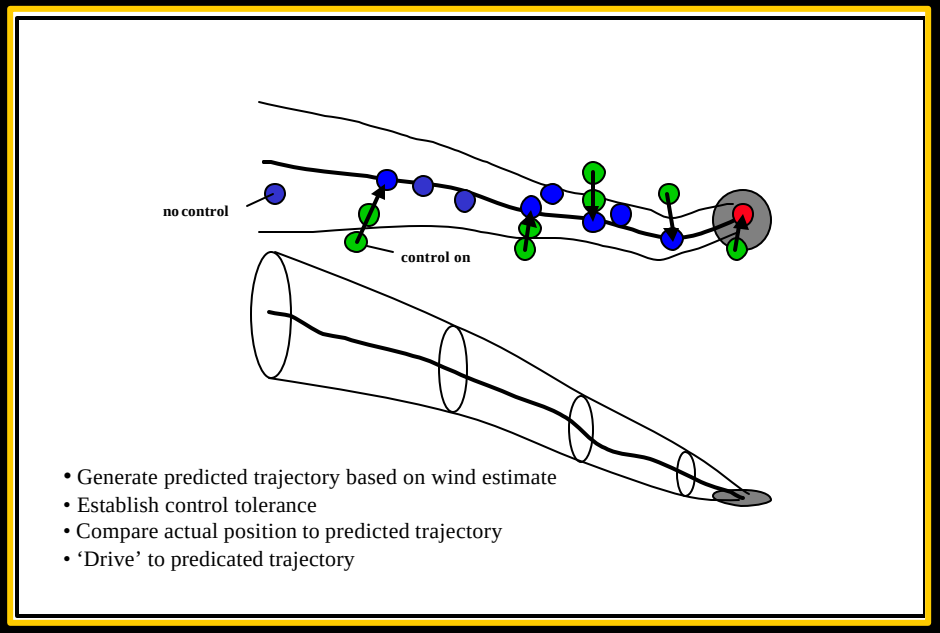
# Technology Focus Area
# Aerodynamic Decelerators

- Gliding parachutes
  - Parafoils
  - Paragliders
- Deployable semi-rigid and rigid wings




# Technology Focus Area
# Sensors & Actuators

- Guidance, Navigation and Control
- Ground proximity/height sensing
- Weather/wind sensing
- Autonomous steering




# Technology Focus Area
# Powered Precision System Integration

# Technology Focus Area
# Airdrop System Modeling

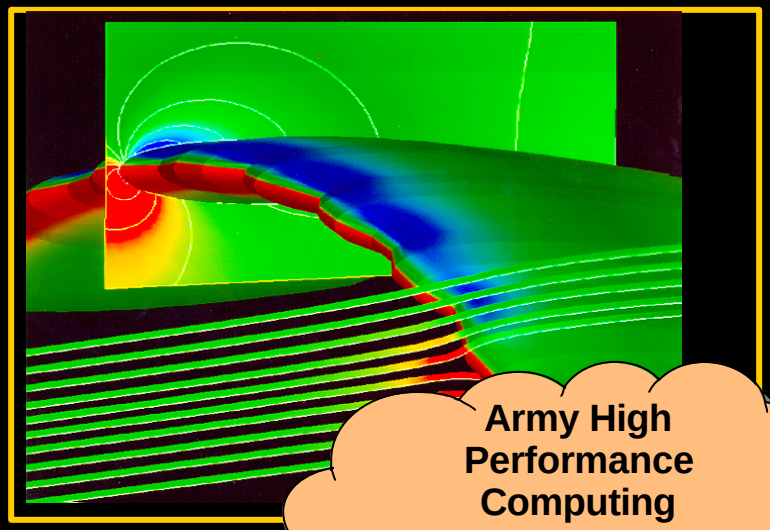
## Army's Airdrop Modeling Vision:

**Meet challenge of Airborne Virtual Proving Ground**

- **Analytical prediction of parachute performance.**
- **Optimize parachute designs for higher performance and reduced life cycle cost.**
- **Decrease RDTE costs and time to fielding new airdrop systems.**
- **Develop high fidelity parachute computer models for design trade-offs and virtual testing /experimentation.**
- **Wind/weather prediction (leveraged)**

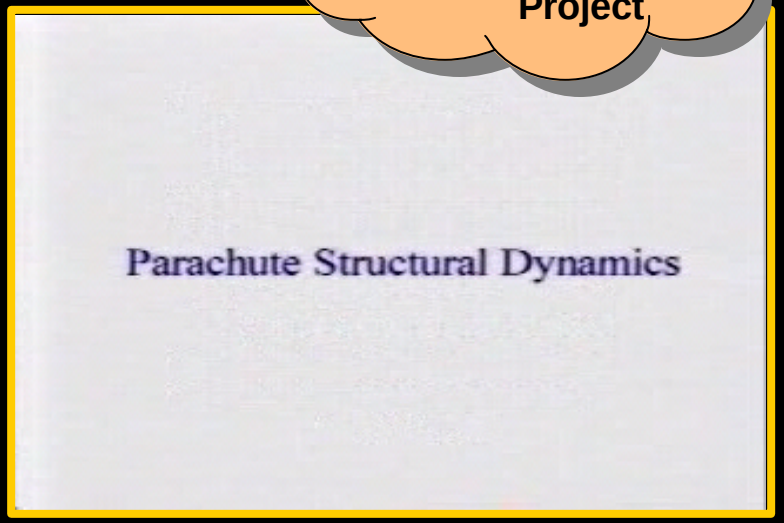
**Technical Approach:**

- **Numerically predict parachute opening and steady state characteristics, Model Fluid-Structure Interaction**
- **Numerically Couple Modified Computational Fluid Dynamics (CFD) and Structural Dynamics Codes**
- **Leveraging of outside organizations (Rice U, UCONN, NASA-JSC, AHPCRC, ARO,, ARL,)**



**Army High Performance Computing**

**Grand Challenge Project**



# FCS Precision Resupply Animation

# Leaflet Delivery Animation

# Precision Airdrop Infantry Resupply

**TODAY**

- 2200 Lb Payload Capacity Gliding Offset Systems
- 600 Lbs Powered Parafoil

**FY08**

- 10K Lbs Gliding Offset System
- 2K-10K Lbs Low Cost, High Altitude Precision